DOCUMENT RESUME

ED 147 112 SE 023 280

TITLE	Regional Meeting of Experts on Environmental Education in Africa, Brazzaville, People's Republic of the Congo, 11-16 September 1976. Final Report.
INSTITUTION	United Nations Educational, Scientific, and Cultural Organization, Paris (France). Environmental Education Section.
REPORT NO	ED-76/CONF.665/COL.2
PUB DATE	15 Apr 77
NOTE	56p.; For related documents, see SE 023 279-281; Not available in hard copy due to marginal legibility of original document
EDRS PRICE	MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS	Education; *Educational Assessment; *Environmental Education; Instructional Programs; *Meetings; Nonformal Education; *Program Descriptions; Program Development; *Program Evaluation; Reports
IDENTIFIERS	*Africa; UNESCO

ABSTRACT

This is the final report on the background and proceedings of the Regional Meeting of Experts on Environmental Education in Africa, convened by UNESCO with the collaboration of the University of Brazzaville. This meeting was one of five similar ones held throughout the world as a follow-up to the UNESCO Conference held in Belgrade, Yugoslavia. This African Regional Meeting aimed at defining specific aspects of the environmental problems particular to the region and specific aspects of environmental education appropriate to the region. Environmental education within formal and nonformal systems were discussed along with cooperation strategies to improve environmental education in African member states. Recommendations of the conference were included in the report. (MA)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED147112

United Nations Educational, Scientific and Cultural Organization

International Environmental Education Programme — Unesco-UNEP

Regional Meeting of Experts on Environmental Education in Africa

Brazzaville, People's Republic of the Congo
11-16 September 1976

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

S. Romero-Lozano

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

SE 023 280

Final Report
ED-76/COF.665/COL. 2

Unesco

2

This is the final report on the background and proceedings of the Regional Meeting of Experts on Environmental Education in Africa, held in Brazzaville (People's Republic of the Congo), 11-16 September 1976. An important stage of the Unesco-UNEP Environmental Education Programme, this Meeting was convened by Unesco with the collaboration of the University of Brazzaville.

The views expressed in this publication are those of the participants of the Regional Meeting of Experts on Environmental Education in Africa, and do not necessarily reflect the official position of Unesco

Paris, 15 April 1977

Original: English

TABLE OF CONTENTS

I. Introduction 1

II. Aims and Objectives of the Meeting 2

III. Present environment and environmental education problems in Africa and their significance for the development of the region 3

A. Present environment problems in Africa and their significance for the development of the region 3

B. Present problems concerning environmental education and their significance for the development of the region 5

IV. Environmental education within the formal education system in Africa 13

V. Environmental education within the non-formal education system in Africa 18

VI. Cooperation and strategies to promote better environmental education in African Member States 20

A. Strategies at national level 20

B. Sub-regional and regional strategies and cooperation 20

VII. Concepts of environment and environmental education: Bases for a definition, arising from the discussions 22

VIII. Resolutions and Recommendations 25

IX. Appendices

1. List of Participants 35

2. Agenda and Working Schedule 39

3. Opening Addresses by:

- Mr. A. Ndinga, Vice-Chancellor of the University of Brazzaville (People's Republic of the Congo) 41
- H.E. the Congolese Minister of Public Works, Town-Planning and Environment 43
- Mr. P. Nallétamby, Adviser on Science Education, Regional Bureau for Education in Africa, Unesco (Dakar) 45

I. Introduction

In collaboration with the University of Brazzaville (People's Republic of the Congo), Unesco organized the first Regional Meeting on Environmental Education within the framework of the Environmental Education Programme carried out in cooperation with UNEP. This Meeting, a follow-up to the Unesco Workshop held in Belgrade (Yugoslavia), is one of five similar meetings planned for the different regions of the world.

Some twenty experts from different parts of the African continent were personally invited by the Director General of Unesco to take part in six days of discussion, beginning on the 11th and ending on the 16th of September 1976.

The opening ceremony, which included official speeches by Mr. Antoine Ndinga, Vice-Chancellor of the University of Brazzaville, the Minister of the Environment in the People's Republic of the Congo and Mr. Nallétamby from Unesco's Regional Office for Education in Africa, was followed by a short introduction by Mr. Mamadou Keita from the Environmental Education Programme at Unesco in Paris, in which he outlined the aims and objectives of the Conference within the framework of the International Environmental Education Programme as well as the role participants were expected to play.

Thereupon followed election of the Bureau, which was composed as follows:

Chairman	Mr. Antoine Ndinga, Vice-Chancellor of the University of Brazzaville (People's Republic of the Congo)
Vice-Chairman	Mr. Joshua Akintola of the Nigerian Council for Educational Research (Nigeria)
French-language Rapporteur	Mr. Assindée Mungala, Director of the African Bureau of Educational Research (Zaïre)
English-language Rapporteur	Mrs. Aisie Talabi Lucan, Centre for Curriculum Development, Institute of Education (Sierra Leone)

II. Aims and Objectives of the Meeting

Held as a follow-up to the Belgrade International Workshop on Environmental Education and in preparation for the Intergovernmental Conference on the same subject due to be held in the USSR in 1977, the African Regional Meeting aimed at defining specific aspects of the environmental problems particular to the region and, hence, specific aspects of environmental education appropriate to the region. It was hoped that the occasion would provide an opportunity both to review the recommendations arising from the Belgrade Workshop in order to adapt them to African reality, and to advise the Director General of Unesco on possible strategies to be adopted for the region. The Meeting was expected to produce a certain number of recommendations addressed to Unesco, UNEP and other United Nations agencies, to non-governmental organizations, to Unesco Member States, etc. These recommendations would provide an answer to a number of problems concerning environmental education arising out of the diversity of the African region and would be analyzed during the Intergovernmental Conference in 1977. Furthermore, the African Regional Meeting was expected to define the means required to promote environmental education in Africa by coordinating resource development activities (aids, equipment, personnel, etc.) to be used in environmental education in the region.

Finally, the Meeting was expected to examine and draw conclusions from case-studies of environmental education in the region in terms of their success or failure.

In view of the restricted number of participants, a very concise agenda had been drawn up by Unesco, the main items of which are included in the themes set out in the following chapters. Papers written and presented by a number of participants opened the discussions on the different themes. Those presenting papers had been asked to be deliberately controversial so as to draw the greatest number of different reactions from the delegates, and ensure that the conclusions and recommendations of the Conference be as concrete as possible.

The present report, therefore, will deal with the problems of environmental education in its African concept, will attempt to draw out the salient points and, finally, set forth the concrete recommendations made. Chapters III, IV, V, VI, VII and IX which follow deal with these topics in detail.

III. Present Environment and Environmental Education Problems and their Significance for African Development

A. Present environmental problems in Africa

The discussions, introduced by a clear but controversial paper by Dr. Victor O.I. Johnson, established that the problems of the African environment and its natural resources could be traced to a number of factors:

1. Land and water are essential to food production in Africa, where the majority of the population lived on subsistence agriculture. Much fertile soil is lost through desertification, erosion, salination and other forms of destructive land use (monoculture) and, in this context, the use of pesticides and fertilizers designed to increase agricultural yields could have catastrophic consequences for man's health and environment. Another critical problem of the African environment is the more or less efficient use of water in regions with limited water resources. As regards food production generally, whether by primitive or modern agricultural methods, it is a fact that the African farmer has had to pay a heavy environmental and ecological price as a result of poor management. The Meeting delegates stressed the need to find appropriate methods for increasing agricultural production based on careful and detailed research.

2. The question of indigenous science and technology, raised by Dr. Johnson, provoked lively reactions from many delegates, the author claiming that in general indigenous scientific and technological practices have had a mainly negative effect on man and his environment. The delegates considered this view exaggerated and felt it would be wrong systematically to reject all these traditions, some of which could easily be adapted to modern conditions. Apart from the slash-and-burn technique in farming and cooking on wood fires, it has yet to be proved that traditional African scientific and technological methods have really had such a destructive effect on the environment as some (including the author) seem to think.

However, there are some traditional medical practices which could have dangerous results because, for instance, of the poor hygienic conditions in which certain surgical operations are carried out. Moreover, the use of

medicinal plants and the indigenous pharmacopoeia in general, whose intrinsic value is being increasingly recognized today, can put the patient at risk through non-controlled dosages or ignorance about correct concentrations. The Meeting, recognizing these dangers, stressed the need for more research in order to improve on traditional knowledge.

On the other hand, a review of the way in which indigneous technology was applied failed to show any apparent dangers to the environment. The problem, as expressed at the Meeting, concerned rather the inability of this technology at present to make a substantial contribution to large-scale development programmes; the tools used are too simple and primitive and unsuitable for large-scale application. Nevertheless, the Meeting emphasized the need for traditional technology to be upgraded, for it constitutes a reserve of useful techniques that may help implement technologies more appropriate to the development of African societies. The Meeting stressed the need to undertake research with a view to improving such scientific and technological methods as could be adapted to the conditions of the modern world.

3. Population problems are becoming more and more critical in the region as a result of too rapid a demographic growth and the Meeting felt that a study of the effects of this phenomenon on the environment was urgent. It is a well-accepted fact that the population explosion in many parts of the African region has aggravated the already serious lack of basic health and housing facilities. In the same way, it is important to make sure that natural and energy resources in Africa suffice to ensure acceptable living conditions for a fast-growing population. The problems of rural migration and high population densities in the cities, where the lack of employment, of resources and equipment lends a tragic aspect to life, are highly significant in this respect.

4. Much as everywhere else in the world, the problems of pollution of air, water, etc., are becoming acute in Africa. Natural air pollution, caused by annual sand storms in the Sahara or Kalahari deserts or by smoke from accidental bush fires, is not a major problem, but the proliferation of industries and cars in the urban environment will pose a grave danger for Africa in the very near future.

Water pollution of both lakes and rivers, into which men constantly pour chemical and biological waste of every kind, including sewage, is a very real problem. The rural as well as a large part of the urban population use these waters for washing clothes and drinking and are thus exposed to great dangers due to the lack of appropriate purifying equipment.

In addition, there exists in Africa problems of pollution caused by radioactive substances, thermal pollution and pollution by pesticides and food contaminants. Radioactive wastes from nuclear reactors in industrialized countries could have serious effects in other areas of the world. As for pesticides and fertilizers, their use in agriculture should be controlled.

5. The Meeting considered that one of the main environment problems in Africa was the exhaustion of natural resources. Most African countries today had neither the technological know-how and capacity nor the capital required for establishing large-scale energy-intensive industries. Nevertheless, many countries on the continent own vast resources which are in the process of being savagely exploited in order to supply industries in technologically advanced countries. In the few instances where small-scale industries have been developed, the need for imported energy and the high cost of oil have paralyzed the entire economy of whole countries. The need for Africans themselves to manage and husband their own resources and to use them rationally was emphasized by the delegates, who added that this could not be realized without a New International Economic Order.

Another aspect of diminishing natural resources, much discussed by the participants, was rapid deforestation, caused by the use of wood as the main fuel in the home, to which they added the industrial use of timber to manufacture furniture for export.

6. A last category of environmental scourges mentioned was natural disasters such as famines, floods, earthquakes, wars and droughts which each year claim the lives of thousands of Africans. It was noted that the problem of droughts had been aggravated by the effects of man's interference with vegetation and the world atmospheric process resulting in climatological changes.

In the face of all these problems, there is an urgent need to inform and educate the African populations, if these dangers are to be averted. Education, in all its forms, is one way of achieving such an objective.

B. Environmental education and development in Africa: present situation and future prospects

1. In their discussion on the problems of environmental education in Africa and their significance for the development of the continent, the participants in the Regional Meeting began by reviewing the present situation and made

the following points:

- Education in several African countries has been environmental, at least as far as primary education is concerned, in the sense that it is related to a study of nature and explores the man-society relationship. A large number of primary school teachers are, nevertheless, inexperienced and consequently lack the expertise for organising activities and, as a result, the methodology used is both primitive and poorly adapted. Certain innovative curricula in primary education in Africa have attempted, at least to a degree, to embrace the main objectives and methodologies of environmental education.

- At the secondary level, the curricula are often both conventional and rigid, the methodologies inflexible and the subject-matter taught compartmentalized. Only very few concise curricula exist in the form of ecology, conservation and social science studies. The delegates further noted the enormous shortage of trained and qualified teachers in the field of environmental education. Teacher training institutions for the secondary level seem to have neither the inclination nor the necessary competence for making innovations.

- At the level of university education, a very small number of institutions, among them Kenyatta University College, exist, where general environmental curricula for teachers are developed. Some institutions, on the other hand, have specialised curricula for ecology, agriculture, medicine and engineering.

- Traditional adult education curricula exist in several countries.

- Environmental curricula for the young exist in only very few African countries.

- The participants referred to some institutions, such as SEPA (Science Education Programme for Africa), ACO (The African Curriculum Organization), ENDA (Environmental Training Programme IDEP/SIDA/UNEP), the ASSP (African Social Studies Programme), all of which are active in the field of environmental education at the African level.

- The Conference also noted the setting up in some African countries of curriculum development centres responsible for introducing innovations in primary and secondary education. The Conference took note of the recent creation of the African Curriculum Organization (ACO), with headquarters at the International Education Evaluation Centre at the University of Ibadan.

Finally, the participants went on to examine certain factors which tended to render the introduction of an environmental education programme into the African educational system more difficult:

- No formal definition as yet exists for the curriculum content and the teaching methods of an environmental education programme. The pluridisciplinary approach, which is recommended for much of environmental education, is seen as being competitive to existing programme design.

- The suggested methodology, which places a heavy emphasis on the problem-solving approach, does not facilitate the integration of such a programme into school curricula.

- Environmental education must include important value judgments which, since they may run counter to community and/or institutional and/or national norms and attitudes, are usually played down or entirely avoided by most formal school and college programmes. This could diminish the prospects of environmental education curricula being accepted there.

- Institutions of education, used to compartmentalization between disciplines, are not designed to be responsive to the needs of an environmental education programme which demands a wide range of involvement embracing the natural and community environments.

- General environmental education is made up of theoretical and practical knowledge and skills combining "hard" science (such as physics) with "softer" subjects (such as sociology and political economy.

2. After this review of the current situation in relation to environmental education in Africa, the Meeting participants attempted to clarify a certain number of concepts:

- The environment is the set of physical, chemical, biological components and economic, social and cultural factors — relating to a group of human beings, an individual or a living organism — which act upon him to a greater or lesser degree and is capable of transforming him to a greater or lesser extent.

- A national development policy based on the environment is opposed both to mere nature conservation concepts and to a conception of development as mere economic growth within world market dependency.

- "Environmental development" could, on the contrary, be described as a process which starts with local needs and potentialities, gives priority to decisions taken by the group of people concerned in the rational use of the physical environment, the upgrading of local resources and of the local underemployed manpower (1).

- To approach the question of environmental education is tantamount to asking what sort of training and education is now being provided in Africa to increase understanding about the environment and provide the necessary skills for transforming it; what contribution does the present school system make or fail to make and what are the prospects for the future? Answers to these questions provided by the Meeting are set out in the three following chapters.

3. In Africa, what are the traditional means of training people for a better understanding and management of the environment?

a) "Traditional" African education as practised in the various African cultures is worthy of close attention. The teaching methods in family and village education are based on accomplishing concrete tasks and applied to the whole range of techniques, art, hygiene, sports and religion; it encourages the young from an early age to engage in farming, hunting, fishing, etc. While helping to acquire knowledge, this type of education at the same time develops the powers of observation, the memory, the reasoning mechanisms and the sens of responsibility. Every adult participates in this form of education.

Throughout the process, "traditional" education is based on the environment and even the teaching of symbolism and religion often serves to regulate the physical environment and aspects of the social life.

b) Trained in this way, the rural African has a generally adequate and rich perception of the environment, which stimulates his action. This has been shown particularly strongly by studies carried out by ENDA on environmental perception in the Casamance region of Senegal and the Mopti region of Mali. In the former case, the physical environment forming part of the community, perception was direct, alive and diversified. In Bambara country, on the other hand, writing was ideographical and

---

(1) This corresponds more or less with the definition of "ecodevelopment".

the environment was perceived through the Bambara symbolism and cosmogony. In both cases, integration within the environment was real and the young were able to understand and, to a certain extent, master their surroundings.

c) In fact, most African social groups have known how to use their environment in a rational way. The management of fields, grazing lands and fishing grounds has often been remarkably efficient. Irrespective of certain deficiencies in traditional practices, of their continued and rapid deterioration and of the need, in particular, for large numbers of technical experts, it should be emphasized that the best and most comprehensive environmental education presently operative in Africa is the lifelong traditional education system still in existence in different African societies.

4. Is it true that the imported school, despite many positive aspects, impedes environmental development?

a) Certain features of the colonial and post-colonial schooling system had some merits, although these varied from country to country, as did a number of interesting attempts at reform.

The imported school is directly linked to the bureaucratic power and ensures its reproduction. It is centred on books and generally implies learning the language of the former rulers. It stresses on hierarchy and encourages individual competition. As shown in particular by ENDA (1) research on school disparities in Dakar, the school reflects the decisive influence of the socio-professional and linguistic environment in which the children live. This school, because it nurtures the hope for social advancement — whereas in reality the majority of school pupils become "dropouts" — is alienating in most countries.

b) Some doubts may be raised as to the capacity of the school system to educate the masses for a better understanding of the African environment and its transformation for the benefit of the greatest number. Peasant know-how and traditional management of the environment no longer hold any attraction for school pupils, who instead turn to an imitation of an alien way of life. Children's drawings, collected and analyzed by ENDA in such cities as Douala, Casablanca, Rabat and Mopti, show that the children, even though they may be living in slums, only

---

(1) ENDA/SIDA/UNEP Programme, B.P. 3370, Dakar, Senegal.

perceive the city through its modern centre, its huge buildings, its traffic lights and tree-lined avenues. The real environment in which most of them live is overshadowed by the imported environment, inhabited only by an infinitesimal part of the city population.

The mass media, reinforcing the influence of the school, relay foreign cultural trends. The children learn to feel contempt for the traditional hut, the local materials and the helter-skelter village and turn to the symetrical city lay-out, the "European style" villa with cement walls and metal roofs. The whole fabric of African life and civilization is all too often set aside, even implicitly spurned. The present school system is impregnated with "colonial education ... (which)," according to Julius Nyerere, "was a temptation to change the values and to replace traditional knowledge with the knowledge of a different society".

Not only do the school pupils set their sights away from their own land or city area, but this school system was a parasite living off the rural ecosystems, absorbing as it does a large share of tax revenue, reinforcing a none-too-efficient bureaucracy and inundating the rural environment year after year with rejects, who in general play no productive role at all in the environment.

Except when it trains senior staff and research, education and environment technicians, the school system more often than not counteracts the development of the African environment managed by and for the benefit of the people living in it.

5. What are the prospects, in Africa, for education to promote environmental development?

a) Education and training to promote environmental development must first and foremost respond to the general needs of sensitizing the entire population, retraining senior and professional staff (since 1972, ENDA has received some 2,500 participants of this category in sessions organized in 13 African countries to train interdisciplinary teams (1)) and integrating a common environmental approach into the curricula of specialized training programmes for personnel involved in developing the environment.

b) It is above all the local and zonal degree of expansion which determines the demand for environmental education.

---

(1) Cf. the experiences at the Kenyatta College (Kenya) and post-graduate courses in applied ecology and physical planning (ENDA, Dakar).

In order for this kind of education to arouse interest, it must be seen to lead to some tangible major economic, social or emotional result; this would no doubt be the case if the needs were to be assessed by villagers and urban dwellers — rather than by government departments — and if they were to decide on basic aims and methods. In this way, the underutilized local resources, the underemployed labour force and the population's capacity for initiative would all contribute to real development.

In such varied examples as community discussions on improving water resources in a sub-arid zone, setting up regional training, drilling a well as a first step in a series of technological projects to develop a village or improve a shanty-town, the training requirements for studying the environment can always be accurately identified; and in collaboration with the people concerned, possible solutions could be found and implemented.

The new forms of training based on such concrete measures have certain features in common. They are directly or indirectly productive action-training schemes. They are welcomed by the people, are based on "traditional" training methods and peasant knowledge and, because they concern the whole group, help to bring together young and adults in a new sharing of responsibility and in the use of better techniques.

Such training schemes do not impose narrow restrictions on people. On the contrary, they guarantee contacts with other groups within the nation and, at the same time, offer an opportunity for some young people and adults, selected by the community, to be given specialized training or higher education.

c) Such training systems at general, zonal or local level, make up the elements of a <u>global strategy</u> in which the mass media, in particular, would play an important role.

The strategy applies to large ecological zones often embracing the whole or part of several States. A pooling of research, specialized training and other resources at inter-State or inter-African level would help to ensure the effectiveness of such measures.

The Conference delegates during their discussions emphasized the importance of seizing traditional education and keeping it alive. They stressed that the concept of environmental education must bring out that

which is "specifically" African and which should be summed up in the definition of the type of education required by the African peoples and the development models made possible by the environment.

The Meeting delegates concluded that the specific African features of environmental education must emerge clearly in the following measures and stages:

- the rational use of material and human resources;
- development of the environment through viable land planning schemes;
- institutional education;
- attitudes and behaviour conducive to improving the quality of life.

Finally, it was emphasized that the future prospects for environmental development suggest a possible reorientation of educational systems in Africa. This would require a reorganization of present syllabuses and subject matter taught as well as retraining working teachers. Stronger links will have to be forged between school and community, and educational themes and teaching aids must be based on the components of the ecosystem in which those to be educated live. These prospects, however, could not be realised unless immediate large-scale environmental education experiments were undertaken in different countries in the very near future.

IV. Environmental Education within the Formal Education System in Africa

After an account of the case of the People's Republic of Benin, the Meeting participants noted that the education system in Africa must be organized to take into account not only the worldwide consciousness of the environmental phenomenon but also, and above all, the specific nature of the African environment.

Such an environmental education is both necessary and urgent; it must be closely linked to the very nature of national and regional priorities and needs and well as to the means required for achieving them.

An analysis of these problems on the basis of different case studies resulted in the following observations:

A. National and regional needs and demands

National and regional environmental education needs and priorities in the African countries were closely linked to those countries' requirements for economic, social and cultural development.

The questions arising are: how will such an environmental education be carried out? Should it be based on traditional African education? Or should it turn its back on traditional methods and only follow the imported system of the formal school? Is it not necessary for a new type of school to emerge, capable of offering maximum opportunities for the integration and dissemination of environmental education? What attitude should decision makers have concerning environmental education within the educational system? The participants have attempted to find answers to all these questions.

1. The need to take inspiration from traditional African education

While acknowledging the fact that the traditional African forms of education operated within a specific socio-economic context which is no longer found intact in Africa, and while recognizing that this method presented some negative aspects, the delegates nevertheless stressed the need to take inspiration from some of its fundamental principles:

- education should be based on the child's own environment through adolescence;

- knowledge of this environment must be fostered through day-to-day activities;

- the environment must be perceived as a whole.

2. The need to reorganize the formal imported school

The colonial-type formal school does not offer an ideal framework for environmental education, as perceived by Africans. In fact, this school alienates the pupils, gives them a fragmented knowledge and prevents the child and the adolescent from achieving a comprehensive view of objects and phenomena.

Therefore, it is not enough simply to develop curricula for environmental education within the framework of this type of school, but rather reforms of the formal education system must be undertaken on a regional scale in order to give to environmental education its true place.

3. The need for new perspectives

The ongoing educational reforms on the African continent and the setting up of institutions responsible for the rational management of the environment are encouraging signs which suggest that environmental education may become prominent in the years to come.

4. Defining the field of application of environmental education

One of the requirements noted by the participants, which operates both at regional and national level, was the need to arrive at a clear definition of the field of application of environmental education, i.e. the different levels at which it should be applied. These levels could well be existing ones, namely, pre-school, primary, secondary and higher education as well as technical and vocational training; however, these levels must in no circumstances be isolated from each other or from the rest of the socio-economic system, from local, national or regional African communities. Nevertheless, environmental education, which should not be clearly dissociated from general education, must take into account the specific features of each educational level. Thus at pre-school level, environmental education must above all aim at giving the child a better understanding of and more respect for the environment.

At primary level, the pupil must learn to structure and relate the various components of his environment.

At secondary level, the adolescent must use the different ecosystems in his environment to develop his scientific reasoning and understanding.

At university level, environmental education must make it possible for the student, the young man, to use research as a means of gaining a more detailed and deeper knowledge of, to interpret and achieve conceptual mastery over his environment. Environmental education at this level in conjunction with technical and vocational training should provide high-level manpower able subsequently to work towards strengthening environmental education in the future. To achieve this end, however, the necessary means must be available.

B. Means required

1. Type of school

Africa must create a new type of school, one truly integrated within the production activities useful to the community, capable of developing new attitudes (respect for the environment, etc.) and skills (ability to reason scientifically and comprehend the environment) in the child and adolescent.

2. Curricula and methods

The curricula and educational methods for environmental education must correspond to the short and long-term economic, social and cultural development objectives in the African States.

They must be adapted to each of the educational levels and be flexible in their implementation and interrelationship. The environmental concepts must be integrated in the curriculum both as regards the different disciplines and at an interdisciplinary level, in order to explain the relationship, the correlations and the interactions between the physical and biological sciences, the social sciences and artistic and physical education. Environmental education must be present in an appropriate form at each level. But it should not be the subject for competition between the various disciplines now included in school curricula. On the contrary, it should act as a link between these different disciplines in the interest of unity in the educational process.

The curricula and methods must be designed in collaboration with teachers, students and other members of the community whose expertise may ensure continuous interdisciplinarity.

Teaching methods, in particular, must be designed to ensure participation by pupils and students, the teacher acting more as a coordinator than a simple provider of information. The approach must be an integrated one.

At pre-school level, the environmental education curricula and methods, whilst teaching the young child to know and love his environment, should aim at making him aware at an early age of the means at his disposal of influencing and acting on the environment, whether it be the natural or man-made environment. This form of education will thus arouse his curiosity:

a) by increasing his chances of making discoveries (e.g. class outings);

b) by teaching him a variety of games, tasks and learning habits. This effort by the teacher would help the young child gradually to master his instincts, to recognize the individuality of human beings and objects, to acquire respect for them and to absorb and learn certain basic and indispensable concepts of communal life.

Seen from this point of view, environmental education at the pre-school level would inculcate a feeling, though not necessarily yet an understanding, in the young child for the harmony, the melody and rhythm of the environment which surrounds and moulds him.

At the primary level, where the physiological and neurological development of the child takes place, environmental education must aim at teaching attitudes and values. Observation and knowledge of the environment should be prominent at this level of education. In order to succeed, the teacher must allow the children active and free exploration of their immediate environment and should guide them to think objectively about it.

At the secondary level, a growing ability to synthesize, increasing knowledge and a scientific understanding of the different ecosystems and the way they are more or less transformed by the presence of man, should reinforce the ecological awareness in the child; respect for all living beings as well as for places would grow and might even result in a commitment by the adolescents to defend this crucial issue. It was suggested that, at this level, the teacher together with his pupils would choose those subjects for study which would lead to an objective and interdisciplinary approach to the basic problems of their immediate environment.

In university education, the student must learn to deepen his knowledge, his interpretation and his conceptual mastery of the environment through research. Higher education combined with technical and vocational training would allow the region to produce cadres capable of working for better environmental education and a better protection of the environment. This is also the level at which teachers are trained. A prerequisite for a successful environmental education is the training of teachers fully aware of the problems involved in this type of education. Teachers converted to the cause of environmental education must develop a new concept about transmitting knowledge. Continuing education must be closely associated with environmental education and with the whole issue of development.

3. Teaching aids

Environmental education requires adequate teaching aids, drawn as far as possible from the daily life surrounding the child and adolescent, easily handled and understood by them. It is therefore necessary to train personnel capable of developing this type of equipment, at both regional and national levels.

4. National languages

The African regional group considers that the African national languages should be deemed the best vehicle for teaching environmental education.

5. Teacher training : is one of the most fundamental aspects of environmental education. In fact, if it is to be a viable proposition in our secondary schools, universities and vocational training institutions, environmental education must be implemented by an open-minded teaching staff working in interdisciplinary and pluridisciplinary teams.

Training teachers to gain a better understanding of the problems involved in development was considered by the group as an important feature of environmental education. Training such staff must aim at making them aware of the need to cooperate between the various disciplines which combine to teach the young.

Lifelong and self-education must be permanent features, and Member States and international bodies should pay particular attention to this question.

Finally, the Meeting participants felt that resistance to change on the part of teachers was one obstacle

to the development of environmental education. This resistance is often the result of the failure of inadequately planned educational reforms; it was due to the teachers' frustrations at frequent changes and improvisations as a result of projects in which they had hardly ever been asked to participate. In order to resolve this problem, the Meeting pointed to the need for better planning and better coordination of educational reform projects in the African region as well as a higher degree of teacher participation in such reforms.

6. Evaluation of environmental education

As in the case of every other educational system, environmental education, both in and out of school, should be evaluated, using both conventional evaluation techniques and new techniques adapted to the needs of Africa. Certain traditional African evaluation methods should also be used. The evaluation should be:

a) continuous and formative;
b) critical;
c) scientific, i.e. objective;
d) carried out under the control not only of education experts but also, and above all, of the entire community which plays an active part in environmental education;
e) the result of constant self-evaluation in every sphere of environmental education.

V. Environmental Education within the Framework of Out-of-School Education in Africa

1. The group discussing this problem attempted to define the target groups for out-of-school environmental education in Africa and arrived at the conclusion that the target should be the entire population, including adults and the young, rural and urban inhabitants, decision makers and professionals, the illiterate as well as school dropouts. This education, in certain cases, should be directed at the public in general, the only differentiation being made being ecological zones. The groups pointed out the danger of drawing too clear a distinction between young people attending school and those who had left or who had never been to school, for the simple reason that such a distinction might be counterproductive to the desired goals of an African-type environmental education, which aim at bringing school and community closer together. Schoolchildren, once back in their own community, should follow the same education activities as their friends, either through the family education system or through national or local programmes disseminated through the mass media or through some other means. In the same way, specific programmes should be drawn up on the basis of current problems; for instance, the drought situation in the Sahel

region required a specific programme designed to educate the population directly hit by the disaster.

2. Discussions showed that in several African countries, development is now in the process of becoming organized. Therefore, now is the time to introduce the concept of environmental education in educational planning, so as to enable States to avoid anarchic development schemes which could have catastrophic results. That is why planners and decision makers should also undergo continuous education linked to environmental issues arising from problems of day-to-day life and the everyday surroundings.

3. Out-of-school environmental education should create new attitudes founded on collaboration and collective participation, in all strata of the population in a given community so as to bring about more respect and a higher degree of responsibility vis-a-vis the management, protection and development of the environment.

4. The development of environmental education within the family or community should play an important role in bringing together the different strata of the population, irrespective of educational level, age or even degree of responsibility within the community.

5. Education through functional literacy schemes must aim at improving health, civic, nutrition, agricultural, socio-economic and other forms of education, by introducing the environmental dimension. In the same way, the Meeting participants felt that the rural and urban extension work presently carried out in many African countries could be an important asset to the development of out-of-school environmental education.

6. The out-of-school environmental education could be transmitted through the mass media, radio, rural press, cinema, etc., on the basis of programmes taking into account regional, subregional, national and even local ecosystems and based on a study of the various aspects of environmental problems and of the best solutions to those problems. Man's activities and their consequences for the environment should be explained using concrete examples.

7. The Meeting participants stated that local languages were a prerequisite for the success of out-of-school environmental education in the region.

8. Finally, the group noted the lack, at local, national and regional level, of institutional structures adapted to the development of out-of-school environmental education. That was why the participants particularly stressed the need for strengthening existing institutions and for creating specialized

department in this field. They also emphasized the need to train community groups of young, of women, etc., capable of incorporating the environmental aspects into their educational activities so as to favour production. These measures would make up for the present lack of youth and women's organizations working in this field.

The various points listed and analyzed in the preceding chapters must be coordinated and developed on the basis of national and regional strategies.

VI. Problems of Cooperation and Strategies for the Promotion of Environmental Education in African Member States

Strategic action at both national and regional level is required to implement environmental education in Africa.

A. Strategy at national level

1. The establishment and development of mesological education in each African country requires a coordination mechanism now lacking in most countries in the region. A crucial measure to be taken at national level was the establishment of an institutional structure through which to plan, coordinate and control curricula and methods of environmental education within the entire educational system. The creation in certain countries of curriculum development centres could be one important stage in the formation of such coordination mechanisms.

2. The establishment of structures grouping experts in various specialties concerned with environmental education should ensure a true interdisciplinary and pluridisciplinary approach to environmental education.

B. Strategies and cooperation at regional level

1. The participants began their discussions on cooperation by making an inventory of existing institutions active in the field of environmental education in Africa. Among the international organizations listed were: Unesco, UNEP, FAO, ILO, WHO, WMO, UNDP, UNICEF, IBRD, AID and the APC Lome Convention. Some of these organizations were purely financing bodies. Non-governmental organizations included the WCOTP, the ICSU, the World Wildlife Fund and the International Youth Federation for the Study and Conservation of the Environment. Finally, regional intergovernmental organizations listed were SEPA (Scientific Education Programme for Africa), the ASSP (African Social Studies Programme) and ENDA (Environment Training Programme).

2. Once this inventory made, the participants went on to point out that coordination of activities presently carried out in the African region in the field of environmental education was either inadequate or totally lacking.

They emphasized that an action concerning Africa must be carried out in Africa by Africans and, finally, stressed that Africans must in the first instance rely on their own resources before requesting assistance from abroad. There was a need to develop solidarity and cooperation between different countries in the region so as to avoid duplication of work and competition in establishing programmes and institutions for environmental education. Cooperation and solidarity should, instead, promote an exchange of staff and stimulate the exchange of ideas between countries and institutions in the region. They should be based on the creation and development of regional coordination mechanisms as well as on conferences, seminars and symposia and on publications as vehicles for exchanging information. As for the coordination and cooperation mechanisms, the participants expressed a wish to see the formation of specialized regional centres, a trend which would prevent the establishment of a multitude of national centres merely for prestige reasons. Such regional staff training centres were a prerequisite for environmental education and would facilitate not only the development of an information network for experts and students but also a scholarship exchange programme.

3. In order to respond in the short term to this need for coordination and cooperation at regional level, the Meeting decided to set up a committee, the "African Committee for the Promotion of Environmental Education". The task of this committee, made up of seven members carefully chosen on the basis of geographic and linguistic distribution in the region, was to continue discussions along the guidelines defined by the Brazzaville Meeting. It should endeavour to make the general public as well as political and technical decision makers in the region aware of the importance of mesological education. And, finally, its task was to coordinate the activities of different African countries in this field in preparation for the Intergovernmental Conference due to be held in the USSR in August 1977. Unesco, UNEP, the OAU, UNICEF and other bodies were asked to assist the provisional Committee until such time (after the Intergovernmental Conference) as a more permanent body could be set up upon which African Member States could confer the task of coordinating the exchange of experiences, experts, programmes, innovations, methods, information

and documentation of all kinds in the field of environmental education in Africa.

4. The participants also emphasized the need, in the context of regional cooperation, to consider the different ecocultures which often spread across various national frontiers. The relationship between ecocultures should not be neglected.

5. Finally, the Meeting expressly stressed the need to associate the OAU in all regional activities.

VII. Concepts of Environment and Environmental Education: Basis for a Definition

The Meeting repeatedly returned to the problem of defining the concepts of environment and environmental education. Instead of restricting themselves to an abstract and general definition, the participants, preferring to be explicit, examined the practical implications of environmental education within the very concrete framework of national development in Africa. However, the subject could not be discussed in depth without, at least implicitly, touching upon certain basic concepts. The delegates therefore attempted to define some of these basic concepts, and relate them in an attempt to provide a basis for a more comprehensive definition.

1. The genesis of the concept of environment

By environment is meant the physical, biological, technological, economic, social and moral environment in which man lives. It is something more than merely the inert background against which his life is acted out.

In order to appreciate the full extent of this concept, it is necessary to recall the dramatic way in which the environmental concept was thrust upon the world's conscience; people suddenly became acutely aware of the growing threat of pollution and felt the precariousness of our situation on a planet spinning around at great speed in space on its inexorable race through the cosmos, surrounded by the only atmosphere and environment in which life as we know it can exist. And it was this unique atmosphere, this environment which was threatened with pollution. Thus, man found himself suddenly in a limit-situation and the realization of this fact opened up a new perspective fraught with dangers and menace. Earth does not have an infinite capacity, our resources are limited. Man has suddenly recognized that the environment is no mere passive backdrop to his life and his activities, but rather a complex fabric of interwoven unique elements whose apparent permanence and fixity is but an illusion. Man had forgotten that he was part of nature, that he belonged to this biosphere, whose survival depends on the ecosphere which in turn is deeply rooted

in the lithosphere and the hydrosphere. There is, moreover, a whole universe of ideas, a network of social and cultural realizations, a noosphere created by man through his interrelation with others. The links uniting man and his environment are multifarious; more than links, they are umbilical cords through which flows the vital substance man needs for his well-being and survival. Any disturbance in this environment is felt by man and may have disastrous consequences for his well-being.

The environment must therefore be seen as a dynamic field in constant change. Man transforms the present environment through his actions and creates that of tomorrow. It is therefore essential in order to capture the reality of the environment, in constant flux as a result of man's activities and of the interaction between its constituent elements, that we should understand it thoroughly and efficiently so as to be able to manage improve and control this our heritage.

Considered in its entirety, the environment is not limited to nature only but includes our man-made surroundings; its ecological, political, economic, technological, social, legal, cultural and aesthetic aspects have to be taken into account. This concept embraces time as well as space, for our environment is a product of the past and proceeds towards the future shaped both through natural processes and through man's conscious and unconscious interference.

2. Environment and development

Any development adapted to African needs must be defined on the basis of the specific features of the African environment. Before establishing any development programme, therefore, we need to acquire extensive knowledge of our environment. Problems in rural areas differ from those in urban areas and, within these zones, they vary from country to country. Hence it becomes necessary to study the specific character of each area and each locality and avoid general statements.

The natural heritage can be impoverished and depleted by a haphazard exploitation of natural resources. It is important that resources be used rationally and a cycle of operations established to prevent pollution and ensure renewal of the resources. For instance, deforestation must be followed by reforestation.

3. Environment and scientific and technological development

Although little is known about certain traditional African "sciences", which do not lend themselves to critical examination, they can nevertheless constitute a reserve of positive factors for the improvement of the environment. Traditional technology

could in fact lead to modern development. But, in science and technology, the gap between the traditional approach in African societies and the modern approach must be bridged.

4. Environment and industrial development

A balance must be struck between industrial development and the protection of the environment. Those very environmental problems which industrial expansion has caused in the developed countries must be avoided. Industrial development should therefore be stimulated while taking into account:

a) problems of spatial organization
b) city development
c) population growth and geographical distribution
d) the way of life of the peoples concerned.

5. Environment and African customs and beliefs

Certain non-scientific means and methods used by African societies can contribute largely to the development of attitudes favourable to a rational use of the environment. These sciences inherent in African societies must be studied if their impact on the environment is to be understood.

6. Environmental education

This type of education is centered around the environment, which becomes its field of study, of application and of action. Education must aim at acquiring knowledge about this environment, at improving and transforming it for the greater good of the community.

Since environmental education aims at the greater good of the community, it must have a place in the national project of education and training to promote a balanced socio-economic and cultural development in the nation. Environment should not be taught as a separate discipline. Environmental education is by nature pluridisciplinary. It concerns the problems caused by the environment and seeks overall solutions that take account of social and individual values, local constraints while making use of the available technology and resources. Environmental education should promote the establishment of a system of values in harmony with the cultural and traditional environment. It should avoid alienation, which makes people only too ready to adopt imported models ill adapted to the African environment.

Aggression, conflict and war all have disastrous effects on man and his environment. Environmental education must therefore promote peace and understanding among men; it must work for peace and justice among nations.

VIII. Resolutions and recommendations

Resolution

In view of the urgent need to coordinate regional activities in the field of environmental education;

In view of the need for African decision makers to prepare for the Intergovernmental Conference;

The African Regional Meeting on Environmental Education

1. Draws the attention of the African Member States of Unesco, of Unesco itself, of UNEP and other United Nations Agencies, of African regional, sub-regional and national organizations to the setting up of a Committee entitled the "African Committee for the Promotion of Environmental Education", whose mission it is to continue discussions along the guidelines established at the Brazzaville Meeting. The Committee should make every effort to make the public and political and technical decision makers in the region aware of the importance of mesological education. The tasks of the Committee further consist of promoting the coordination of activities in different African countries, in preparation for the Intergovernmental Conference to be held in the USSR in October 1977.

2. Requests that Unesco, UNEP, the OAU, UNICEF and Member States assist the provisional Committee until such time after the Intergovernmental Conference as a more permanent body can be formed, upon which the Member States might confer the task of coordinating the exchange of experiences, experts, curricula, innovations, methods, information or documentation of every description concerning environmental education in Africa.

Recommendations

A. Environmental education within the framework of the formal education system in Africa

a) The Meeting,

Convinced that the imported formal school is not conducive to achieving adequate development of environmental education in the African Member States;

Convinced that African traditional education provides a more comprehensive, practical and ethical vision of the African environment;

Convinced of the need to use certain fundamental principles of traditional African education in order to lend a new dimension to school education through achieving maximum integration of the school within the African environment;

1. Recommends that Member States, Unesco, UNEP and the relevant regional institutions undertake research in this field in order to promote the establishment of a new type of school totally integrated within the African environment in all its aspects;

2. Recommends that Member States in the African region continue and accelerate reform of their educational systems, while taking their inspiration as far as possible from the fundamental principles of traditional African education with a view to better environmental development.

b) The Meeting,

Considering the lack of material and human resources for the organization and development of environmental education within the educational system in Africa;

In view of the need to combine all structural, human and linguistic means for the organization and development of environmental education within the educational system in Africa;

1. Recommends that the Member States in the region establish training and teaching programmes which correspond to national and regional development objectives and the specific objectives of environmental education;

2. Recommends that the Member States in the region, Unesco, UNEP and every relevant regional and national institution produce teaching aids drawn in the first instance from the environment of the African child and adolescent, that they may learn to know, respect and improve their environment;

3. Recommends that the Member States, Unesco, UNEP and all relevant regional and national institutions ensure continued training of teaching staff aware of the problems of the African environment and capable of helping the child, the adolescent and the community towards a better understanding of the different dimensions of their environment. Teacher training must be seen as a basic prerequisite for the promotion of mesological education in Africa.

c) The Meeting,

Having noted the inadequate development of environmental education in certain sectors of technical and vocational training and research,

1. Recommends that the Member States and any organization concerned place special emphasis on environmental education in technical and vocational training institutions for engineers, doctors, technicians, agronomists, meteorologists, hydrologists, spatial and urban planners, economists, economic planners and lawyers, both at national and regional level, with a view to preparing such experts for a better professional use of the environment within the framework of national development and for better cooperation in the process of environmental education;

2. Recommends that African Member States, Unesco and international and national training organizations introduce and develop teaching curricula and research programmes in universities and institutes on the specific fields of the environmental sciences within a well-defined framework of national development.

d) The Meeting,

Recognizing the lack of adequate projects and programmes capable of inspiring Member States in the region to a better adaptation of the educational systems to the needs of an indispensable environmental development,

In view of the need to undertake concrete action to serve as examples for groups of countries or every country in the region and in view of the need to test the results of different research projects and confirm the results of the application of various educational projects centering around the environment,

1. Recommends that Unesco, UNEP and other United Nations Agencies as well as international non-governmental organizations assist Member States, national and regional institutions in Africa in the development of pilot projects concerned with the various aspects of an environmental education within the educational system in Africa. Such projects could become models to be emulated by different countries in the region;

2. Recommends that Member States, Unesco, UNEP and other institutions active in the field of environmental education at school level undertake continuous and critical evaluation of activities carried out within the field of environmental education and, to this end, use evaluation methods taking into account the point of view of the community as a whole. Such evaluation must bear upon knowledge and attitudes among children and the young, but also on the impact of environmental education on the environment itself and on national development in general.

B. Environmental education in the out-of-school sector in Africa

a) The Meeting,

Taking into account the danger of erecting a barrier between the formal and non-formal systems of education,

Recommends that the African Member States take advantage of the wave of reforms now being carried out in their countries in order to bridge the gap between school and out-of-school education, in an effort to develop family and community environmental education programmes so as to make the school-going child feel less apart from other members of the community.

b) The Meeting,

Noting the lack of programmes to develop teaching aids for training teachers in out-of-school environmental education;

Noting the need to develop such teaching aid programmes and to ensure training of personnel for non-formal environmental education;

Aware of the serious environmental problems presently facing many African cities,

1. Recommends that Member States, assisted by Unesco, UNEP, inter-African and other institutions concerned, launch pluridisciplinary training programmes for various groups of professional staff, including decision makers and administrators, involved in environmental problems. Such programmes organized within the context of out-of-school education should be aimed at conscientizing professional staff and providing them with information and training for the solution of environmental problems. They would also help to train technical personnel capable of assuming a practical role in environmental matters.

2. Recommends that Member States, Unesco and other United Nations Agencies be urged to stimulate and finance the development of study plans and teaching aids appropriate to environmental education at the non-formal level; such arrangements should be made for wildlife conservation, national parks, museums, village polytechnics, etc.

3. Recommends that Member States, Unesco and other institutions concerned undertake to develop many more aspects of environmental education within the framework of current functional literacy programmes. These programmes should embrace different ecosystems or different ecocultures, which often straddle several state frontiers;

4. Recommends that African Member States, regional institutions, Unesco and other United Nations Agencies be urged to develop teaching materials and train personnel for extension work including elements of urban planning and management dealing with green spaces, sanitation, health, etc., and educating the general public on questions of mesological education. Further recommends that local institutions be set up for the purpose of working on the coordination of teaching materials in this field.

c) The Meeting,

Recognizing the need for pilot studies for toying out new ideas and for research projects aimed at developing and improving methods, means and curricula in the field of non-formal environmental education,

1. Recommends that Unesco, UNEP, inter-African institutions and Member States be urged to sponsor research studies and pilot projects to investigate appropriate methods and strategies that would be useful for environmental education at the non-formal level; in particular, the use of inexpensive materials, adapted technologies and suitable innovations compatible with the African conditions;

2. Recommends that Unesco, UNEP and other institutions concerned assist Member States as well as national or regional institutions in the development of one or two model pilot projects in the field of out-of-school environmental education.

d) The Meeting,

Noting the lack of institutions and organizations concerned with out-of-school environmental education;

Recognizing the need for this type of institutions and organizations in order to develop out-of-school environmental education,

1. Recommends that African Governments be urged to strengthen existing institutions and organizations active in the field of out-of-school education and to set up such institutions and organizations in countries where they do not exist already.

2. Recommends that Unesco and UNEP assist and support community associations, private clubs already active in the field of environmental education, principally through national institutions, so that the initiatives taken by such associations and clubs may be publicized as an example to others;

3. Recommends that responsible Governments, Unesco and UNEP aid and assist out-of-school women's groups in their efforts to create awareness of and further environmental education principles.

C. National strategies for the implementation and development of environmental education

a) The Meeting,

Noting that the lack of coordination of activities in different government administrative departments has a very detrimental effect on the development of environmental education;

Convinced of the need for some coordination machinery for environmental education in each country of the region;

Inspired by certain examples which have proved successful,

1. Recommends that the Governments of African Member States be urged to set up interministerial and interdisciplinary coordinating committees for environmental affairs, including education, in countries where no such bodies exist, and where environment committees already exist, the scope of their activities should be extended to education including non-formal education. This type of committee or sub-committee should deal with education, both in and out-of-school, and should organize operational symposia and seminars at national level for the development of different aspects of environmental education.

b) The Meeting,

Emphasizing the need for African countries to rely on their own resources before requesting assistance from foreign countries and international agencies;

Convinced of the need and the urgency of instituting environmental education,

1. Recommends that Member States be urged to use every means and all resources available to them to promote environmental education. The States should in the first instance exhaust their own resources before applying for assistance from external agencies.

c) The Meeting,

Convinced that traditional African education can provide useful elements for environmental education in the region;

Convinced of the need to use African languages for the promotion of environmental education,

1. Recommends that Member States make use of African languages to carry out environmental education, both at national, sub-regional and regional level. Studies should be undertaken on ways to improve these languages and increase their dissemination;

2. Recommends that Unesco, other United Nations Agencies, inter-African institutions, Governments and national institutions be urged to undertake studies on traditional African education and technology with a view to applying these to environmental education at all levels.

D. Regional strategies and problems of regional and international cooperation

a) The Meeting,

Recognizing the need for regional and sub-regional co-operation in order to promote environmental education;

Wishing to avoid dispersion and duplication of efforts on environmental education within the region,

1. Recommends that Unesco, UNEP and other international agencies and institutions concerned create a coordinating body for environmental education in the African region;

2. Recommends that Member States, Unesco and UNEP promote the creation of international clubs in the African region with a view to maintaining continuous contacts between groups in different countries;

3. Recommends that Unesco and UNEP, with the help of other interested bodies, assist Member States in setting up a regional African youth organization, whose task it would be to coordinate the activities of youth mouvements centered around a study of the environment and nature conservation.

b) The Meeting,

Recognizing the need for creating general awareness of the African public on the question of environmental education;

Recognizing the need for permanent contacts between specialists in environmental education as well as between political leaders, planners and even the African peoples in general,

1. Recommends that African Member States and international organizations interested in the problem of environmental

education at regional level organize technical meetings and operational seminars from time to time with a view to solving specific educational and training problems of environmental education in the region;

2. Recommends to the United Nations, the OAU and African Member States to organize an Environmental Education Week in the region, the last day of which should coincide with International Environment Day.

c) The Meeting,

Recognizing the need for cooperation between countries, institutions, educational establishments and universities and between specialists in environmental education in Africa;

Recognizing the need for coordination of regional activities,

1. Recommends that Member States, educational institutions and establishments and universities in Member countries combine their efforts with a view to promoting wider knowledge of environmental education programmes, methods, discoveries and research results in each establishment;

2. Recommends that Unesco, UNEP and other United Nations Agencies and African Member States set up regional centres whose functions would be to:

- collect and disseminate information and documents;
- organize meetings and exchange experts, teaching aids, teachers and planners;
- organize research activities on the various aspects of the regional environment in order to ensure better knowledge and a higher degree of mastery of the environment;
- train teacher training staff for environmental education.

3. Recommends that the relevant international bodies (e.g. Unesco, UNEP, FAO, UNICEF) find the means and resources required for the establishment and/or development of such regional centres;

4. Recommends that Member States, the OAU and international organizations — in particular the UNDP, UNEP, Unesco, UNICEF — be urged to give financial aid and technical assistance to the African Regional Committee to the extent of the needs expressed by this groups in fulfilling its mission. It must be recalled that the Committee was set up to coordinate and promote environmental education activities in the African region as well as to create awareness of the problems of mesological education in the region's political and technical leaders, mainly in preparation for the Intergovernmental Conference to be held in the USSR in October 1977;

5. Recommends that the Member States and the OAU replace the provisional Committee by a more permanent body and confer upon it the task of coordinating the exchange of experiences, experts, programmes, innovations, methods and various kinds of information in the field of environmental education.

d) The Meeting,

Having noted the need for an exchange of experiences and ideas with other developing countries in the world,

Recommends that African Member States and African organizations concerned develop cooperation and exchange experiences with other regions of the world and in particular with the regions of the developing world (Latin America, Arab countries, Asia, Oceania).

Appendix 1

List of Participants

Invited Experts

1.	Adewole, C.A.	Regional Office of the ASSP P.O. Box 44777 Nairobi, Kenya
2.	Akintola, Joshua M.	Nigerian Educational Research Council P.O. Box 8056 Lagos, Nigeria
3.	Blagué, Alphonse	Direction des études Ecole normale supérieure B.P. 858 Bangui, C.A.R.
4.	Bugnicourt, Jacques	IDEP / ENDA Formation pour l'environnement Dakar, Senegal
5.	Cissoko, Mamadou	Secrétariat d'Etat à la promotion humaine Dakar, Senegal
6.	Cole, Edmond Thomas	SEPA (Science Education Programme for Africa) P.O. Box 9169 Airport Accra, Ghana
7.	Daramola, S.F.	ICEE, Institute of Education University of Ibadan Ibadan, Nigeria
8.	Dzobo, Noah-Komba	Department of Educational Foundations University of Cape Coast Cape Coast, Ghana
9.	Johnson, Victor O.I.	Institute of Education University of Sierra Leone P.O. Box 1471 Freetown, Sierra Leone

10.	Lucan, Talabi Aisie	Centre for Curriculum Development Institute of Education, Tower Hill Freetown, Sierra Leone
11.	Mungala, Assindée	Directeur, Bureau africain pour les sciences de l'éducation B.P. 14 Kisangani, Zaïre
12.	Rajoana, Tiaray	Laboratoire de géologie EESL, Université de Madagascar Tananarive, Madagascar
13.	Ramgoolam, Kisore Chandra	Mauritius Council for Environmental Studies and Conservation Isidore-Rose Quatre Cocos, Mauritius
14.	Sacramento, Léon	Direction des études et de la planification, Ministère du Plan B.P. 342 Cotonou, Bénin
15.	Thelejane, Thomas	Institute of Education National University of Lesotho P.O. Roma, Lesotho
16.	Wangari, Elizabeth	National Parks P.O. Box 42076 Nairobi, Kenya

The People's Republic of the Congo Delegation

17.	Bouboutou, Hélène	Faculté des lettres et sciences humaines Département de géographie B.P. 89 Brazzaville, P.R. Congo
18.	Malonga, Antoine	Direction INRAP Brazzaville, P.R. Congo
19.	Mampouya, Constant	Institut de développement rural Brazzaville, P.R. Congo
20.	Mang-Benza Raymond	INSSED, B.P. 237 Brazzaville, P.R. Congo
21.	Mouanza, Jonas	M.E.P.S. Brazzaville, P.R. Congo

22. Mbenze, Albert	Ministère de l'environnement B.P. 2148 Brazzaville, P.R. Congo
23. Miayoukou	Faculté des sciences Brazzaville, P.R. Congo
24. Sita, Marcel	Direction de l'alphabétisation Ministère de l'éducation nationale Brazzaville, P.R. Congo
25. Tsoumou-Gavouka	Faculté des sciences Brazzaville, P.R. Congo
26. Makany, Levy	Faculté des sciences Brazzaville, P.R. Congo
27. Diallo, Djime	INSSED, B.P. 237 Brazzaville, P.R. Congo

Observers

28. Breslin, James B.L.	Chief, Training Service Branch Education and Training Department World Meteorological Organization Geneva, Switzerland
29. Romain, Jean	Conseiller pédagogique en matière d'hygiène de l'environnement OMS Bureau régional de l'Afrique Brazzaville, P.R. Congo

Meeting Secretariat

Ndinga, Antoine	Recteur, Université de Brazzaville Brazzaville, P.R. Congo
Keita, Mamadou	Environmental Education Programme Unesco, 7 place de Fontenoy 75700 Paris, France
Nallétamby, Philippe	Conseiller en sciences Bureau régional de l'Unesco pour l'éducation 12, avenue Rome Dakar, Senegal
Mongi, Albert L.D.	United Nations Environment Programme P.O. Box 30552 Nairobi, Kenya

Interpreters

Schlolwski Bataille, Léon

Lenormand, François Gérard

Ndiaye, Abdoul Aziz

Appendix 2

Agenda

1. Opening Session

2. Election of Chairman, Vice-Chairman and Rapporteurs

3. Presentation of the International Environmental Education Programme

4. Present environment and environmental education problems in Africa and their significance for the development of the region

   (i) Environmental education within the framework of the formal education system in Africa

   (ii) Environmental education within the framework of non-formal education in Africa

   (iii) Problems of cooperation and strategies for the promotion of environmental education in African Member States

5. Adoption of Recommendations

6. Adoption of the Report

7. Closing Session

Working Schedule

	SATURDAY 11th	SUNDAY 12th	MONDAY 13th	TUESDAY 14th	WEDNESDAY 15th	THURSDAY 16th
MORNING SESSION	- Opening Session - Election of Bureau - Presentation of the International Programme for Environmental Education	Excursion	- Plenary Session Item 4 on the Agenda	- Working Groups: Item 4(i) and 4(ii) on the Agenda	- Paper: Item 4(iii) on the Agenda - Plenary Session: Item 4(iii) on the Agenda	- Plenary Session: Item 4(iii) on the Agenda - Adoption of Recommendations
AFTERNOON SESSION	- Presentation of the environmental situation and the state of environmental education in the region - Plenary Session: Item 4 on the Agenda	Excursion	- Paper on Item 4 on the Agenda - Working Groups: Item 4(i) and 4(ii) on the Agenda	- Working Groups: Item 4(i) and 4(ii) on the Agenda		- Adoption of Report - Closing Session
					- Evening of Entertainment	

Appendix 3

Opening Addresses

Opening Address by Mr. Antoine Ndinga,
Vice-Chancellor of the University of Brazzaville

Comrade Minister of the Environment,
Comrade Ministers,
Mr. Representative of Unesco,
Mr. Resident Representative,
Ladies and Gentlemen,

This Conference, organized at the initiative of Unesco and the United Nations Environment Programme, is an important event for our continent. The University of Brazzaville is honoured to be permitted to host this Conference and, through my person, would like to take this opportunity to congratulate the organizers on their important initiative. The University would like to reiterate its willingness to make every possible contribution towards improving the life of man in Africa and in the world.

Comrade Ministers,
Messrs. Representatives of UNDP and Unesco,

The environment has many dimensions and lies at the heart of the existential problems of our species, for it encompasses every aspect of our present life and our future.

The University of Brazzaville, where this Conference is being held, sees the environment as the physical world surrounding us, its institutions, the ideas and the men who produce them; as the system of international cooperation designed to guarantee peace, justice and prosperity for the whole of mankind; and as the whole range of dialectical relationships which exist between these different component parts of the whole.

The problems of the environment cannot be solved without instituting research to help us acquire knowledge on how to use the resources provided by the environment rationally, nor without paying special attention to the training of men and women able to devote their expertise to the liberation of man in every aspect of his life.

The University of Brazzaville is an instrument of liberation and development at the service of the Congolese and African people and, in its capacity as a higher education institution, is prepared to make every effort to assume its responsibilities to provide for research and training. In doing so, it constitutes one of a number of research and training units in Africa upon which Unesco and UNDP can base their continent-wide action to promote environmental education.

We might ask ourselves how effective can be a strategy, a programme or a whole range of strategic points if no centre exists which would be responsible for collecting all available information on environmental problems and continuously studying the objectives, the programmes, the human and material resources necessary to implement planned actions.

The problems of the environment are such that humanity must constantly keep them under review and analysis. In this context, the University which I have the honour of directing is prepared always to cooperate with national and United Nations institutions in order, in addition to the services we render our nation, to assume whatever responsibilities the international organizations should like to confer upon the People's Republic of the Congo.

Our modest resources at the present time do not permit the scale of activities we should have liked to undertake on behalf of our distinguished guests. However, you may rest assured that the will to act is in no way impaired.

I do not wish to take up more of your time, for other speakers are waiting who will deal in greater depth with those technical and political problems which this Meeting is to discuss.

I thank you and wish your Meeting every success.

Address by H.E. the Congolese Minister of Public Works, Town-Planning and the Environment

Comrade Ministers and Dear Colleagues,
Mr. Resident Representative of UNDP,
Mr. Representative of Unesco,
Ladies and Dear Guests,

Upon me has been conferred the honour of wishing you welcome here on Congolese territory, here in our beautiful capital Brazzaville, an appropriate venue for this Meeting on Environmental Education, on behalf of the Congolese Labour Party and its President, Comrade Marien Ngouabi, President of the Republic, Head of State, Chairman of the Council of State, Head of the Revolutionary Government; on behalf of the Congolese people and on my own behalf.

The environment, as you all know, is the common heritage of mankind as well as being its protection. It is the responsibility of the international community as a whole to ensure that man in his every activity be guided by a profound respect for and a desire to protect the economic, social, ecological and mesological resources upon which our very lives depend.

As our cities expand so their population grows and pollution of air and water threatens health. The cities suffer from other environment problems, too, such as traffic jams, overcrowding, the disappearance of green spaces, an ever-mounting flow of waste and rubbish, fire risks and other public security dangers, noise and bad smells, social alienation and rising crime.

In order to improve the quality of life for everyone a balance must be struck and justice achieved in the structure of economic relations between nations.

It is therefore essential to recall and apply the decisions of the United Nations Environment Conference as well as the Recommendations of the World Population Conference, the United Nations World Food Conference, the Second General Conference of the United Nations Industrial Development Organization, of the World Conference of International Women's Year, the Declaration and the Action Programme of the 6th Extraordinary Session of the United Nations General Assembly and the Charter for Economic Duties and Privileges of States as well as the recent United Nations International Conference on Human Settlements held at Vancouver.

These texts, resolutions and recommendations make up an appropriate legal background against which the debates of this Meeting on Environmental Education could be conducted.

I am already now convinced that your discussions, which I hope will be fruitful, will contribute towards improving the quality of life for human beings. For the most important objective of any human settlement policies is to bring about rapid and continuous improvement in the quality of life of each and everyone, beginning with the basic needs of all: food, housing, drinking water employment, health, education, training, leisure and social security, without any discrimination based on race, colour, sex, language, religion, ideology, national origin or for any other reason, in a world of freedom, dignity and social justice.

I hereby declare the Meeting on Environmental Education open and thank you for your attention.

Address by the Unesco Representative, Mr. Philippe Nallétamby, Adviser on Science Education, Unesco Regional Bureau for Education in Africa (Dakar)

Mr. Minister of Public Works and Transport, in charge of Town-Planning, Housing and Environment,
Mr. Representative of the Minister of Primary and Secondary Education,
Mr. Representative of the Minister for Rural Economy,
Mr. Resident Representative of the United Nations,
Mr. Representative of the United Nations Environment Programme,
Mssrs. Representatives of the Specialized Agencies,
Ladies, Gentlemen and Dear Colleagues,

It gives me great pleasure to be once more in the pleasant city of Brazzaville and express to you, in the name of the Director-General of Unesco and of the Regional Director in Dakar, Unesco's gratitude to the Government of the People's Republic of the Congo for having agreed to organize this regional meeting in their country and facilitate the participation by the experts from many African countries now present among us. We are happy, thanks to the generous hospitality of our friends in the Congo, to be able to welcome these regional experts, who have agreed to contribute their valuable knowledge and experience of the situation in their own countries and we should like to express our warm thanks to each and everyone of them.

The Greek philosopher Heraclitus once said: "You cannot swim twice in the same river". By these words, he wished to express the changing, flowing and elusive nature of reality. Reality changes from one instant to the next, nothing is every reproduced with absolute fidelity. No two events in our lives ever occur in exactly the same way.

Yet we are continuously tempted to view our problems from similar angles. We see them in terms of past situations or in terms of data which have proved valid in other contexts, in other countries ...

The environment which we shall be discussing throughout this Meeting is, to be sure, not a new concept. Man has always been conscious of his physical, inorganic, biological, social and cultural environment. He has always felt its effects and been subjected to its influence. And it is this same environment, whether rural or

urban, which he must, so to speak, harness and conquer if he is to live out his life and prosper. Why, then, this sudden resurgence of interest in the environment?

In 1972, a book written by Rachel Carson, The Silent Spring, sounded the alarm and drew the world's attention to the very serious consequences for the environment of abuses in the industrialized world. This environmental crisis could not be ignored as though it were a temporary imbalance in nature which would right itself automatically. Instead, it highlighted the limitations of our world and spelt heavy menace for the whole of mankind. It evoked an apocalyptic threat of ever-growing industrial pollution of our environment aggravated by an accelerated population growth; pollution of our rivers made unsuitable for fish; pollution of the air above our food-producing fields where the birds had stopped singing, killed by insecticides; poisonous gases seeping from pharmaceutical or chemical factories killing both men and beasts, poisoning the soil they permeate to the point of rendering contaminated areas uninhabitable by man.

The biosphere, that zone of living matter, that network of plant and animal organisms, which covers the earth and which constitutes our ecological environment — the only one in which we can survive — was thus threatened. This biosphere is grafted onto the sphere of inorganic matter which makes up our planet and upon which its survival depends. The absolute necessity of containing the sources which pollute our world becomes apparent. However, in order to contain them, we must know about them.

The problem was presented to the international conscience in 1972 at the Stockholm Conference on the Human Environment. Whereas the industrialized nations were concerned with controlling industrial pollution, Mrs. Indira Gandhi asked questions of special concern to the Thirld World: "how can we tell those who live in villages and slums that the oceans, the rivers and the air we breathe must not be polluted, when their own lives are polluted at the very source? Are not poverty and destitution in themselves powerful agents of pollution"? (1)

More recently, the French daily Le Monde (14 August 1976) published an interview with Mr. Tolba, Director of the United Nations Environment Programme. Four years after Stockholm, Mr. Tolba's words re-echoed those of Mrs. Gandhi, when he declared: "The ravages caused to the environment by underdevelopment are as serious, if not more serious, than those caused by industrialization".

---

(1) Quoted by Jon Tinker in New Scientist, 28 August 1975, p.481.

Our resources are limited and the detrimental effects on the environment by degrading the biosphere restrict human development within even narrower limits; in addition to the external limits, there are what might be termed internal constraints which may retard or neutralise the processes of growth and development. Such internal constraints (five in number) are concerned with the basic needs of mankind: food, shelter, clothing, education and health.

The agonizing question now facing the industrialized world and the Third World in particular concerns precisely these internal and external limits and the prospects for survival. Will mankind, submitted to these external forces and internal pressures, be able to satisfy the basic needs of all without exhausting the external resources of the planet and seriously threatening social development towards a better life for the greatest number?

At the end of this analysis of environmental problems we thus find the problem of socio-economic development in the Third World countries.

Development is not synonymous with growth. An increase in the GNP of a given country does not necessarily mean that that country is progressing towards an integrated and harmonious development. Increases in the national income figures per capita do not express an improvement in the quality of life for all. Major economic disparities may exist which are not revealed merely by statistical averages. National development must be measured in terms of a more equitable economic distribution in a fairer social climate.

The environment concept as understood today implies a new way of perceiving the human spirit. We now know that our material resources are not unlimited. Our habitat is a spaceship, comparatively isolated in an indifferent universe. Growth and expansion cannot progress indefinitely.

The aim of development does not lie in objects. It lies in man himself. It is men, not objects, which must be developed, yet objects can provide indispensable tools for that development. Although, in our countries, the main problem is not one of preventing imminent natural disasters nor overcoming ecological catastrophes, it is nevertheless true that our African countries are faced with an urgent need to improve their environment. Judicious use of material things depends on adequate knowledge, an understanding, by the way, which must be nourished by an ever active and permanent research. It follows that an educational component must be included among the solutions to the environmental problems.

In Stockholm, the general concern for establishing environmental education was clearly stated in Recommendation No. 96, which urged that an international environmental education programme be

instituted. The approach should be pluridisciplinary and the programme should apply both to formal and non-formal education. It should be included in every level of education and concern the public in general, the ordinary citizen, whether he live in town or in the country, whether he be young or old, so that everyone would be initiated into the use of simple techniques for managing and controlling their environment.

Since that time, a world survey undertaken by Unesco has helped to identify and determine environmental education needs and priorities in individual countries. Unesco has launched two separate programmes in this vast field of man's environment: the population education programme, which concerns the human environment, exchange and interaction between man and society and the Programme for Environmental Education which has brought us together here. The latter is concerned with the interaction between the society and the physical and material world.

The International Workshop on Environmental Education held in Belgrade in October 1975 stressed the following point: environment must be considered in its entirety, in all its natural or man made aspects, e.g. ecological, political, economic, technological, social, legal, cultural and aesthetic aspects.

The environment cannot be taught as a separate discipline in the same way as mathematics, biology or linguistics. Environmental education is by nature pluridisciplinary. It takes a problem-solving approach and looks for solutions that safeguard social and individual values, take account of local constraints and make use of available technological and financial resources.

Our Regional Meeting here in Brazzaville is the first in a series of regional meetings aimed at formulating the African contribution to this world-wide undertaking and at making such environmental education more meaningful by coming down to the grassroots level of the national and local context, not only at the level of national plans but at that of universities, schools, classrooms, for it is at this level that is done the pedagogic and scientific work which will spell out the success or failure of the project. Our Meeting will therefore examine the content of curricula, methodologies in use, opportunities provided, the external and internal efficiency of environment teaching, and all factors contributing to the quality of environmental education, which must be in tune with the socio-economic, scientific and cultural environment of the nation.

Such, in brief outline, have been the intentions of the Unesco Environmental Education Programme. Allow me to conclude by sketching the profile, as drawn at the Ministerial Conference in Lagos in February 1976, of a man shaped by education in the enlightened democracy of an educated society:"a man deeply rooted in African

cultural traditions and in the African environment, a human being conscious of his political and civic responsibilities, of his duties to his family, ready to play his role as a useful and productive citizen for the economic and social development of the community".

Thank you, ladies and gentlemen, for your attention.

Appendix 4

List of Papers Presented

Dr. Victor Johnson, Senior Research Officer, Institute of Education at the University of Sierra Leone
Theme : Present Problems of the Environment and Environmental Education in Africa

Mr. Jacques Bugnicourt, Director of the Environmental Training Programme, IDEP/ENDA, Dakar
Theme : Environmental Education and Development in Africa

Mr. Leon Sacramento, Director of Studies and Planning, Minister of Planning; President of the National Commission for the Environment, Republic of Benin
Theme : Environmental Education in the Formal System of Education

Mr. Marcel Sita, Director of Literacy in the Popular Republic of the Congo
Theme : Environmental Education within the Framework of Out-of-School Education in Africa (The Case of Literacy Campaigns in the People's Republic of the Congo)

Mr. S.F. Daramola, Lecturer at the International Educational Evaluation Centre, Ibadan University
Theme : Methodologies and Evaluation of Environmental Education in Africa

Mr. Edmond Cole, Executive Secretary of the Science Education Programme for Africa (SEPA)
Theme : Problems of Cooperation and Strategies for the Promotion of Environmental Education in African Member States

Appendix 5

Closing Address

By Mr. Antoine Ndinga, Vice-Chancellor of the University of Brazzaville

Comrade Minister,
Ladies and Gentlemen,

The brilliant success of this Meeting bears witness to the maturity, the competence and spirit of understanding displayed by the participants during their discussions on the various items on the Agenda.

One could, in fact, have expected difficulties to arise out of differences of opinion between various schools of thought or linguistic conflict due to the presence of two language groups.

The participants meeting here in Brazzaville have given the lie to the pessimistic forecasts of the enemies of African unity and development. They have risen above divisive factors and devoted the whole of their time to an objective analysis of the problems of environmental education.

It is clear from reading the Final Report and the Recommendations that the participants have thoroughly examined the various items on the Agenda, i.e.

- Present environment and environmental education problems in Africa and their significance for the development of the region;
- Environmental education within the framework of the formal educational system in Africa;
- Environmental education within the framework of out-of-school education in Africa;
- Problems of cooperation and strategies for the promotion of environmental education in African Member States.

These are indeed the most pressing aspects of the problem of environmental education in Africa.

Throughout our discussions, we have appreciated the wealth of experience of the participants in this field and the high scientific quality of the papers presented as well as the political importance of the arguments put forward by each participant.

Comrade Minister,
Ladies and Gentlemen,

The general impression prevailing, now that the Meeting is coming to an end, is that the participants have achieved the objectives set by Unesco and the United Nations Environment Programme.

The Brazzaville Meeting has made it possible to review the situation of environmental education in Africa and to make concrete proposals to Unesco and UNEP through a series of Resolutions which, if implemented, would result in a complete and effective action programme.

One of the most important decisions taken in Brazzaville, one which is welcomed both by the participants and by Africa, is the setting up of the Committee for the Promotion of Environmental Education. This committee has been given the task of continuing the discussions along the guidelines defined in Brazzaville. It should make every effort to arouse the conscience of the African public, and of political and technical decision makers on the importance of environmental education; and it will be responsible also for coordinating the activities in different African countries in preparation for the Conference due to be held in the USSR in 1977.

At the end of the discussions, it is my duty once again to thank both Unesco and UNEP for having chosen the University of Brazzaville as the venue for this Meeting, the results of which will undoubtedly have a profound effect on the future of education in Africa.

This Meeting could not have been so successful were it not for the active participation and spirit of understanding of the participants. I should like to thank them in particular.

Finally, I am grateful to all those, present or absent, near or afar, who have helped us to make this Meeting a reality.

I hope that the Congolese environment has been pleasant to the participants and organizers alike and that all of you will have a safe journey back to your own countries.

Thank you.